

REMARKS

By this Amendment, claims 1 and 16 are canceled without prejudice or disclaimer of the subject matter contained therein, and claims 2-14, 17-29 are amended.

Allowable Subject Matter

Applicants gratefully acknowledge the indication of allowable subject matter in claims 12, 14-15, 27, and 29-30. By this Amendment, claims 12, 14, 27, and 29 are rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 15 and 30 are dependent on claims 14 and 29. Thus claims 12, 14-15, 27, 29-30 are allowable.

Claim Rejections – 35 U.S.C. § 102

In the Office Action, claims 1, 9-10, 16, and 24-25 were rejected under 35 U.S.C. § 102(b) as being anticipated by US 4,975,969 to Tal (hereinafter “Tal”). This rejection is addressed as it relates to claims 9, 10, 24 and 25.

Claim 9 is directed to an image processing apparatus including an image input means for sensing an object in a first direction to extract X_1 number of feature points from the object image and sensing the object image in a second direction to extract X_2 number of feature points from the object image. A feature extraction means is provided for extracting a plurality of feature points from the first object image data sensed in the first direction, and for checking whether the number of the extracted plurality of feature points corresponds to a preset X_1 number of feature points. Similarly, a plurality of feature points are extracted from second object image data sensed in the second direction, and checked for whether the number of the extracted plurality of feature points corresponds to a preset X_2 number of feature points. Verification means is provided for verifying the first and second feature extracted patterns with first and second reference patterns registered in advance. Then a discrimination

means is provided for determining that an object associated with the first and second object image data is a person, when the first and second feature patterns match the first and second reference feature patterns.

Claim 24 is directed to an image processing method comprising a first step of sensing an object image in a first direction and a second direction to extract a number of feature points in each direction, a second step of checking whether the number of extracted feature points corresponds to a preset number, a third step of verifying the extracted feature patterns with the reference feature pattern, and a fourth step of determining whether at least one of the extracted feature patterns matches the reference patterns.

For example, FIG. 5(c) shows that four feature points are extracted from the first object image data sensed in the first direction. FIGS. 5(a) and 5(b) show that two feature points are extracted from the second object image data sensed in the second direction. Also, for example, FIG. 10(b) shows that four feature points are extracted from the first object image data sensed in the first direction. FIGS. 10(a) and 10(c) show that three feature points are extracted from the second object image data sensed in the second direction.

Thus, how many feature points can be extracted is identified in advance for each sensing direction. The normalization processing is predicated on the agreement between the number of extracted feature points and the pre-identified number of them. If the number of extracted feature points do not agree with the pre-identified number, normalization processing is not executed. In other words, if an object image is not sensed properly, the proper feature pattern cannot be obtained. In such a case, wasteful normalization processing is not executed.

After confirming the agreement between the number of extracted feature points and the pre-set number of them, a feature region is set based on, for example, four feature points obtained from the first object image data (a feature region is set by a setting method based

on the four feature points), and another feature region is set based on two or three feature points obtained from the second object image data (a feature region is set by a setting method based on the two or three feature points).

In distinction, Tal uses ratios from the image and does not disclose that feature regions are set by using a preset number of feature points or especially by verifying extracted feature points with a preset number. Thus, as each and every element of claims 9 and 24 are not met by Tal, Tal cannot anticipate these claims. Claims 9, 10, 24 and 25 are allowable.

In the Office Action, claims 1, 13, 16, and 28 were rejected under 35 U.S.C. § 102(b) as being anticipated by US 4,641,349 to Flom (hereinafter "Flom"). Claims 13 and 28 are addressed with respect to this rejection.

Claim 13 is directed to at least one image sensing means and an image input means for sensing an object image in a first direction by moving the image sensing means to a predetermined first position to extract a number of feature points from an object image and inputting first object image data obtained by sensing the object image, and sensing an object image in a second direction in the same manner.

Claim 28 is directed to an image processing method comprising the steps of sensing an object image in a first direction by moving an image sensing means to a predetermined first position to extract a number of feature points from the object image and inputting first object image data obtained by sensing the object image, and sensing the object image in a second direction in a similar manner.

In distinction, Flom uses a series of algorithms and does not disclose sensing an object image in a first and second direction by moving an image sensing means to predetermined positions. As Flom does not disclose each and every feature of claims 13 and 28, Flom cannot anticipate these claims. Claims 13 and 28 are allowable.

Claim Rejections – 35 U.S.C. § 103

In the Office Action, claims 2-3, 5, 7, 11, 17-18, 20, 22, and 26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tal in view of US 5,995,639 to Kado et al. (hereinafter “Kado”).

Claims 2 and 3 both include a normalization means for extracting a plurality of feature points from first object image data sensed by a first image sensing means, checking whether the number of extracted feature points correspond to a preset number, and conducting a similar process for second object image data.

Claims 17 and 18 both include steps of extracting feature points from first and second object image data and obtained by a first step of sensing object image data in first and second directions, respectively, and checking whether the number of extracted feature points correspond to a preset number.

Tal, as discussed above, uses ratios of the image. Kado merely uses patches to extract feature points from each patch. First, there is no suggestion that the patching technique of Kado could be used with Tal. More particularly, using patches in Tal’s ratio based method, even if possible, would not result in a claimed invention in which extracted feature points are compared to a number of preset feature points to obtain a feature pattern. Claims 2, 3, 17, and 18 are allowable.

Dependent claims 5, 7, 11, 20, 22, and 26 are allowable for at least the above reasons and for the additional features recited therein.

In the Office Action, claims 4, 6, 19, and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tal in view of Kado and further in view of US 6,119,096 to Mann et al. (hereinafter “Mann”). Mann does not remedy the deficiencies of the rejection of claims

3 and 18 argued above. Mann does not provide a suggestion for using a preset number of feature points in each sensing direction with the above prior art teachings. Claims 4, 6, 19, and 21 are allowable.

In the Office Action, claims 8 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tal in view of Kado and further in view of Face Recognition using temporal image sequence (IEICE Transactions PRMU 97-50). The Face Recognition publication does not remedy the deficiencies of the rejection of the claims 3 and 18 argued above. The Face Recognition publication does not provide a suggestion for using a preset number of feature points in each sensing direction with the above prior art teachings. Claims 8 and 23 are allowable.

Conclusion

Accordingly, the Applicant respectfully requests that the Examiner reconsider and withdraw the asserted rejections. In addition, the Applicant respectfully submits that claims 2-15 and 17-30 are in condition for allowance. Should further issues require resolution prior to allowance, the Examiner is requested to contact the undersigned.

Should any fees be due for entry of this submission that are not otherwise accounted for, the Applicants ask that any such fees be charged to our Deposit Account No. 03-3975, with reference to Order No. 008312/0278090.

Respectfully submitted,

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